DOCUMENT RESUME

ED 167 791 CE 020 245

TITLE Trade Education Syllabus in Graphics Industries Occupations.
INSTITUTION New York State Education Dept., Albany. Bureau of Occupational Education Curriculum Development.
PUB DATE 78
NOTE 155p.

EDRS PRICE MF01/PC07 Plus Postage.
DESCRIPTORS *Behavioral Objectives; Course Content; *Graphic Arts; Layout (Publications); Learning Activities; Printing; Reprography; Secondary Education; State Curriculum Guides; *Teaching Methods; *Trade and Industrial Education

ABSTRACT

This syllabus provides occupational education teachers in secondary schools with a guide for developing a course in trade graphics which meets the minimal requirements that an acceptable two-year program in New York State must provide. The content is presented in six sections, and each one includes terminal objectives and suggestions for correlated content, behavioral objectives, and teaching. The first, an introduction to graphics occupations, covers class organization, industrial organization, history of printing, printing materials, and printing methods. The next three sections cover the following graphics occupations respectively: (1) pre-press (includes letterpress, offset, darkroom operations, and camera operation), (2) presswork (includes letterpress and offset), and (3) bindery (includes paper cutter, folder, collator, paper drill, stitcher, plastic punch, plastic binder, perfect binder, padding press, and materials handling). The fifth section, on ancillary procedures, covers maintenance and business procedures. The last section focuses on preparation for employment, including applying for a job, evaluating job offers, and inservice education. Lists of resources, as well as suggested equipment, tools, and supplies, conclude this syllabus. (EM)

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TRADE EDUCATION SYLLABUS

IN

GRAPHICS INDUSTRIES OCCUPATIONS

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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1978

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Chief, Bureau of Trade and Technical Education
Carl G. Benenati

FOREWORD

The changing technology in the graphics industry prompted Carl G. Benenati, Chief, Bureau of Trade & Technical Education, to ask G. Earl Hay, Chief, Bureau of Occupational Education Curriculum Development to arrange for development of a new syllabus for programs of instruction in graphics industries occupations.

In August 1976, a curriculum planning committee, consisting of graphics teachers Louis DiLella, Monroe BOCES #2, Charles Marshall, Rockland BOCES, Anthony Saccone, Albany (City) Vocational Education Center, and John Wyatt, Onondaga-Madison BOCES, and Philip Madeiros, former Director of Industrial Relations of Williams Press Company, Finch-Pruyn Paper Company, and Westvaco Paper Company, was convened by Joseph J. Messier, Associate in Vocational Curriculum, the project manager. The committee's sessions produced a content outline, a list of suggested equipment and initial supplies, suggested student acceptance qualifications, and a statement of course philosophy. The product was evaluated by Richard Barnwell, Associate in Industrial Education, then approved by Mr. Benenati for development.

Under a grant-in-aid to Livingston-Steuben-Wyoming BOCES, student-performance objectives, teaching suggestions, and a resource list were developed by the BOCES' graphics teacher, Richard Hawkins, and Evan Lougher, formerly ISSOE Coordinator for Region Six. The manuscript was prepared for printing by Mr. Messier, then evaluated by Louis B. DeLuca, graphics teacher at Amsterdam High School, and Mr. Barnwell before being published as this *Syllabus in Trade Graphics*.

The content of this syllabus is that which the committee of experienced trade graphics teachers considered to be appropriate for the student of average abilities. As in all trade education, the student's success must be evaluated on mastery of skills and knowledge necessary to discharge the duties of a beginning worker in some graphics occupation — never in comparison to the achievement of other students, or to an arbitrary percentage of the total course content. To this end, a *student performance objective* has been written for each of the items of content. Each teacher is urged to write such objectives when developing a personal course of study, based upon this syllabus.

Teaching suggestions have also been included to stimulate the teacher's ingenuity. These must not be considered to be prescriptive. As no one instructional method will be effective with all students, neither will one be effective for all teachers. These teaching suggestions should be gathered with those presented in professional publications and seminars, and teacher-to-teacher "shop talk," as reserves to utilize as the situation warrants.

CONTENTS

Foreword iii

Introduction 1

Section I — Introduction to Graphics Occupations 3

- Class Organization 4
- Industrial Organization 5
- History of Printing 6
- Printing Materials 9
- Printing Methods 13

Section II — Pre-Press 15

- Letterpress* 16
- Offset 21
- Darkroom Operations 25
- Camera Operation 28

Section III — Presswork 35

- Letterpress* 36
- Offset 39

Section IV — Bindery 45

- Paper Cutter 46
- Folder 47
- Collator 48
- Paper Drill 50
- Stitcher 51
- Plastic Punch 52
- Plastic Binder 52
- Perfect Binder 53
- Padding Press 53
- Materials Handling 54

Section V — Ancillary Procedures 57

Maintenance 58
Business Procedures 60

Section VI — Preparation For Employment 63

Applying for a Job 64
Evaluating Job Offers 65
Inservice Education 66

Resources 67

Suggested Equipment, Tools, Supplies 69

Letterpress* 69
Offset 73
Bindery 81
General 83

INTRODUCTION

Courses of instruction in trade graphics are two-year programs requiring 2 1/2 hours of study on each of 160 teaching days per year. Students who successfully complete this two-year program may be awarded the four units of credit required for a Group II major sequence, as outlined in *The Secondary School Curriculum of New York State — A Handbook for Administrators.* A student may be considered to have successfully completed the program when, at the end of the instructional program, he has attained a "working ability" in all graphics occupations included in the curriculum, and "advanced apprentice" proficiency in any one job area.

This syllabus states in a logical order, but not necessarily a teaching progression, the minimum instruction which acceptable programs must provide. It includes those graphics occupations such as composition, press work, bindery work, and shipping, commonly offered in occupational education, but does not include such less common or tangential job areas as screen process and commercial art. The syllabus is not a "ready-made" course of study. Skills required for employment vary from region to region within the State. Since the *raison d'etre* of occupational education is to prepare the student for employment, the program of instruction must be tailored to the industrial situation. Each teacher, using the syllabus as a basis, must construct a course of study which reflects the characteristics of area industries, student characteristics, and his own instructional style.

The importance of the characteristics of area industry is exemplified by the decision on emphasis of letterpress* or offset printing. The preponderance of instruction must be in that method of printing prevalent in area industry. There is general agreement that all programs should, however, include some instruction in both methods, if only familiarization with a small hand press or duplicator. (To remind the reader of this local discretionary power, all mention in this syllabus of letterpress* is marked with an asterisk.) Similarly, all students should experience bindery work, stock room work, and all other included graphics occupations before specializing in a preferred job area. To this end, the first year of the program and part of the second should be devoted to attainment of general working skills and knowledge, the remaining time being spent in increasing competencies in one or more selected job areas.

The variety of jobs, with their diverse skills, which comprise graphics industries occupations, allows for a broad range of student abilities. The prospective student who possesses knowledge and abilities equivalent to a passing grade in general science, general

math, and basic typing may become employable as an "all around printer" in a small job shop — and eventually own one -- as well as being employable anywhere in the specialized work force of a large printing plant. The less capable prospect may well succeed in one specific speciality. Even those considered to be physically or mentally handicapped should not be automatically excluded from this instruction; each type and degree of handicap being considered in relation to the requirements of specific graphics occupations jobs. To effect such efficient scheduling, graphics occupations teachers must work closely with guidance personnel to implement a justifiable screening process. The advice of teachers of early secondary industrial arts who understand the philosophy and objectives of occupational education, as well as graphics technology and techniques, should prove invaluable in scheduling. The right of every student to experience education of his choice must be tempered by the fact that it is *no* service to the student to schedule him into a program of instruction in an employment area for which he lacks qualifications proven necessary to attain and maintain employment.

TERMINAL OBJECTIVE

On terminating required study of this section, the student will be able to:

State the school and shop regulations pertaining to specified situations.

Describe the chronology of the evolution of graphics methods and technology, and the impact of outstanding developments, from pre-Gutenberg times to the present.

Identify by name, the basic printing materials, components, and methods and will have demonstrated habitual conformance to organizational and safety regulations.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Class Organization	*The student will be able to:*	
— School Regulations • Attendance • Procedures	State the general regulations regarding class attendance and participation in instructional and extracurricular activities. Explain why regulations are necessary, and describe the undesirable results of lack of reasonable regulation or conformance thereto.	Develop a student handbook covering regulations and required procedures, which will be distributed to the students and all guidance personnel. Revise as necessary before each school year. Make the handbook a topic for class discussion which will ensure student view that rules are made to help and protect them rather than "... to be broken."
— Shop Organizational Pattern	Compare the shop organization with that of a comparable industrial situation, and explain reasons for variation.	Enlist student involvement in maintaining an effective bulletin board, depicting appropriate shop practices.
— Safety Code • Fire drills • Fire procedures	State the rules governing group and individual behavior during fire evacuation, when fire is in the shop and when its location is unknown. Explain the classification of combustibles and coding of fire extinguishers.	Discuss the effect of nonconforming or panicked individuals on safe evacuation of a burning building. Use actual occurrences as examples, emphasizing the causes of multiple deaths as asphyxiation or internal injuries due to trampling, rather than actual burning. Set guidelines for student decision on whether to only report, or first attempt to extinguish, fire in the shop.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Housekeeping equipment shop facility	Describe the general requirements for maintaining a safe shop.	Assign students to specific roles in housekeeping procedures, including those of safety inspector and shop steward. Rotate the assignments.
• Personal conduct clothing jewelry hair	Describe required conduct and explain why such behavior patterns are necessary. State the regulations regarding hair style and personal attire, and explain why they are needed. Demonstrate understanding of the safety code by habitual conformance with its provisions.	Emphasize that most people lose their jobs because of continual violation of established procedures, or inability to "fit in" with other workers, rather than due to lack of skills.
o Industrial Organization		
— Management • Supervisor • Foreman • Superintendent	Describe the purpose of the various chains of command found in industry, and the primary responsibility of roles in the chain as assigned in the school shop.	Discuss the need for organizational chain of command in industry. Relate to familiar organization in the community, school, and sports.
— Labor • Union steward • "Local" officials	Identify the correct order of a sample chain of command, and describe the role of each job title. Identify by official name the major graphics occupations unions — local, national, and international.	Invite a management team member of a graphics business to talk with the class. Discuss the purpose of labor unions and present an overview of their history. Invite a union official to talk with the class.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
	Demonstrate an understanding of management and union organizational roles, and of their basic interdependency, by exercising their responsibilities and powers in school shop assignments.	Describe the see-sawing of union vs. management predominance. Give examples of the effect on the individual and on society, of too much power held by either. Identify labor and management roles to be duplicated. Distribute job descriptions. Rotate students through the various responsibilities.
o History of Printing		
— Pre-Gutenberg • Scribes • Wood block imprint	Describe the evolution of graphic communications from primeval pictographs to the Gutenberg period.	Display illustrations of cave drawings, hieroglyphics, and development of alphabets.
— Gutenberg Period • Birth of production	Describe the significance of moveable type in mass production of printed matter.	Construct a time-line for development of graphics from the earliest forms to the beginning of mass production.
	Describe the significance of mass produced printed matter in the educational and socio-political development of mankind.	Relate the growth of graphic communications to other advances in development of civilizations.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
— Development to Date		
• Type development wood type metal type machine setting cold type setting — strike on — photo composition	Chronologically list the cardinal points in the development of type and explain the effects of each on the graphics industry.	Show the film "Typography Today." Discuss the film's key concepts.
• Press development wine press George Washington press platen — foot operated — power hand automatic cylinder press — power hand automatic offset press — Senefelder — Rubel — Rotary 1920 high-speed	Briefly describe the evolution of press development. Explain the effects on the graphics industry of the introduction of platen, cylinder, and offset presses.	Assign readings from texts or references which review the significance of historical press development.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Paper development hand made — Chinese rice — Egyptian papyrus machine made — English	Briefly describe the evolution of paper development from its origin to machine manufacture.	Assign readings from texts or references which review the history of paper making. Discuss the readings. Distribute simple recipe for home paper making. Encourage students to make paper and bring samples to class.
• Ink development hand made	Briefly describe the evolution of ink development from its historical origins to present time.	Assign readings from texts or references which review the history of ink making. Discuss the radical changes through the years and the advantages to industry.
• Film development rigid base — wet plate — dry plate flexible base — celluloid — plastic — acetate — paper	Briefly describe the evolution of film development from wet plate through acetate base. Identify samples of each film base.	Display samples of early film types. Demonstrate use of early types, if possible, and discuss the results in relation to modern types. Encourage students to bring to class any early type photographs in family collections.
• Camera development silhouette daguerreotype process cameras	Briefly describe the chronology of camera development. Describe the differences in process methods.	Compare samples of early glass plate and film cameras. Discuss the basic principles of cameras. Discuss the principles of camera process methods.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Printing Materials	*The student will be able to:*	
— Paper		
• Manufacturing process	Briefly describe modern papermaking procedure.	Use overhead projection of diagrams of Fourdrinier machine in describing the manufacturing of paper.
• Common types bond bristol offset cover coated	List, by common name, five common paper stocks, and state the principal use of each. Identify by sight and touch a sample of each stock.	Distribute samples of the five stocks. Have students compare, noting differences. Describe common uses of each stock, and explain which characteristics make each best suited to the use.
• Special types NCR safety label — gummed — ungummed — pressure sensitive	List the three most commonly used special types of paper. Identify by sight and touch a sample of each type and its variations.	Describe the uses of the special type papers. Distribute samples of each, one at a time, and have students examine and discuss properties and uses, then compare.
• Basic sizes English metric	State the size of a sample of poster board and bond, bristol, book, and cover paper in English units and metric.	Demonstrate the simplicity and ease of use of metric measurement. Compare to our decimal system money vis-a-vis the confusing system formerly used in England.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
	Describe the geometric progression of sizes obtainable.	Demonstrate the "half" system of obtaining smaller sheet sizes from stock.
• Weight substance number M weight metric	Describe the two current systems of stating stock weight. Describe the metric system of stating stock weight.	Distribute samples of stock of various weights. Discuss substance number or M weight of various units of stock papers. Have students handle stockroom packages to give meaning to numbers.
• Textures	Define "texture."	Distribute hand-outs describing common procedures for identifying stock.
• Grain	Define "grain." Determine grain direction.	Demonstrate the methods of determining grain direction — folding, tearing, watermark. Distribute samples of stock. Have students identify paper type by texture, and determine the grain direction.
• Properties	Explain why specific stocks are best suited to certain uses, while of limited value or unsatisfactory in other uses.	Distribute hand-outs listing basic sizes and substance weights, other common sizes, and qualities and descriptions of uses of common kinds of paper. Discuss the advantages or disadvantages of each, explaining that printing papers are made in such a great variety of sizes, thicknesses, and surface

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
		finishes to allow selection for best performance in the various uses and printing processes.
• Problems	Describe common paper problems, state the causes, and describe means of prevention.	Run sheets dry through a duplicator to show static electricity and its causes. Wet some sheets to create curl. Relate to storage and/or working conditions, and discuss and/or demonstrate preventive measures.
— Type • Classification serif sans serif square serif script and cursive text decorative	Identify samples of type as one of the six major type classifications.	Distribute hand-outs illustrating the major types classifications and their key features and identifying characteristics. Compare similarities and differences.
• Identification parts of type — family — series — font	State the categories by which type is identified.	Discuss the three common methods of identifying type. Project transparencies of sample pieces.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
point size	Determine the point size of a sample piece of type.	Have students practice identifying type.
• Setting	Describe the different methods of producing type composition. Identify by sight, samples of the six most common methods of typesetting. Demonstrate the principles of — typographic design copy fitting and manuscript preparation text and display compositions in completion of assigned shop projects.	Distribute hand-out briefly describing the methods of typesetting and the criteria for choosing a particular method.
— Ink	Name the three components common to all inks.	Discuss the composition of inks. Explain the functions of vehicle, pigments, and modifiers.
• Components	Name the sources — organic or inorganic — of pigments used in printing inks.	
• Characteristics inherent stock compatible	Describe the ink characteristics required for use on such papers as — bond bristol cover coated	Have students investigate the properties of inks, by such means as odor, weight, and viscosity. Compare.
• Properties		
• Type letterpress offset rotogravure flexographic silk screen	Explain why different printing processes require inks with specific characteristics.	Demonstrate the differences in "long inks" and "short inks," and the methods of modifying to suit production requirements.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Mixing and matching	Briefly describe how ink is manufactured.	Demonstrate mixing small amounts of ink. Relate to production methods.
	Name the primary and the secondary colors, and identify each by sight.	
	Demonstrate the technique for mixing colored inks.	Use charts and a prism to demonstrate primary and secondary colors. Use color wheel in discussing relationship of color and light.
	Use standard terms in relation to — Color preferences Color considerations Color characteristics	Distribute hand-out sheets of ink terminology. Emphasize the importance of consistent use of standard terms in referring to ink and compositions.
	Mix inks for color match.	Have students practice matching colored inks.
	Describe accepted method of storing ink and controlling inventory.	Explain the precautionary concerns in storage and inventory control.
o Printing Methods — Letterpress* — Offset	Describe the characteristics of the five major printing methods, and the process of production for each.	Distribute commercial, or teacher-prepared, hand-outs describing the methods and processes.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
— Rotogravure — Flexographic — Screen Process	Describe the differences in the ink types required for each method.	Review properties of inks. Distribute samples of the product of each method. Discuss each printing method, the ink and processes involved, and the advantages and disadvantages of each. Demonstrate how to determine which method was used to print each sample.

TERMINAL OBJECTIVE

On terminating required study of this section, the student will be able to:

Prepare a layout and compose copy,
Make up and pull a proof,
Proofread the copy, and make corrections
Impose and lock the job
in letterpress* printing.

Prepare a layout and compose copy,
Produce and proofread camera-ready copy,
Prepare the darkroom and camera for use,
Expose and develop film,
Strip and make plates
in offset lithography.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Letterpress*	*The student will be able to:*	
— Layout and Design • Thumbnail sketch • Rough • Comprehensive • Dummy	Identify by name, representative samples of sketches and layouts. State the identifying characteristics of each. Draw a thumbnail sketch, and a rough, a comprehensive, and a dummy layout.	Define the term "layout." Distribute individual samples of thumbnail sketch and rough, comprehensive, and dummy layouts. Use projected transparencies to illustrate the identification points of each. Compare. Explain the purpose of, and need for, each type.
— Composition • Hand	Set composing stick to a specific measure, set space, and justify given copy centered in the stick, then test for justification. Set composing stick to a specific measure, set space, and justify straight matter by spacing in or out, then test for justification. Dump the form on galley and tie up.	Distribute hand-outs describing the California Job Case layout and spacing. Introduce each operating tool, its nomenclature, and care. Demonstrate procedure for — setting composing stick setting type by hand spacing and justifying dumping and typing form Require use of trade vocabulary.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
		Distribute job sheets giving such directions as: — set to 15 picas — 6 pt. slug between lines — center your name, address, and phone number — use 3-em spaces between words — ask teacher for assistance when needed — show completed stick to teacher
• Machine		
text	Name and describe three types of hot metal composition machines, and state the advantages and disadvantages of each.	Distribute illustrated hand-outs describing the linotype, monotype, and Ludlow typesetters. Discuss the principles, advantages, and disadvantages of each machine, and the factors to be considered in choosing one.
display	Name, list the principal components, and describe the functioning of the hot metal machine most used locally.	Review the rules of composition, spacing, and justification.
	Regulate metal level and temperature, set stick to measure, assemble matrices and spacing, and cast a line flush left, flush right, and centered.	Demonstrate adjusting of temperature and metal level controls.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
	Set justified straight matter to measure, cast and distribute matrices and spacing.	Explain lay of case, spacing case, types of Ludlow sticks.
	Align different matrice sizes and set jobs with leader lines, using offset stick.	Demonstrate setting stick to measure, assembling matrices, inserting spacing, casting a line, distributing matrices and spacing, and use of leaders and two or three column sticks and bridges.
		Assign jobs which reinforce student practice of machine typesetting.
• Composition of type metal	Name the three principal metals found in type metal.	Distribute hand-outs describing type metal components and alloy proportions.
	State the percentage of each metal in the alloy used in a specified typesetting process.	Discuss the properties obtained by varying the proportions of tin and antimony in the alloy.
• Smelting	State the temperature which must be maintained to smelt the alloy.	Discuss the effects of too high, as well as too low, smelting temperatures.
	Describe drossing procedures.	Emphasize the importance of preventing contamination of the metal by other materials.
	Explain the need for, and process of, adding required amounts of plus metal to the melt before pouring.	

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
	Prepare, smelt, and pour ingots of a typemetal, in conformance with all safety procedures, the resulting alloy being within industry tolerances of proportion and contamination.	Discuss such hazards as hot equipment, eruption of molten metal, and inhalation of metal fumes. Emphasize the critical importance of unvarying conformance with safety procedures and use of safety equipment.
— Make-up	Arrange type according to copy, into pages or forms of the required size.	Demonstrate make-up according to specific copy on layout.
	Make-up a job as specified, from a rough layout.	Assign students to make-up line jobs, laying out provided copy for placement.
— Proofing	Name the principal parts of a galley proof press and describe their functions.	Distribute hand-outs of galley proof press construction, nomenclature and function.
• Galley	"Ink-up" a galley proof press.	Project transparency of hand-out as visual aid to discussion of proofing.
	Place the galley in position.	
	Ink the form, pull a proof, and wash the form.	Demonstrate the procedure for pulling a proof, making corrections, and distributing the form.
	Make corrections affecting justification.	
	Untie form and distribute type, leads, and slugs.	Assist students in practicing the procedure.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Repro	Name the principal parts of a reproduction proof press and describe their functions.	Distribute hand-outs of reproduction proof press construction, nomenclature, and function.
	Ink a reproduction press.	Project transparency of hand-out as visual aid to discussion of proofing.
	Position the form and apply bearers.	
	Ink the form and pull a reproduction.	Demonstrate the proofing procedure.
	Adjust packing pressure and pull a good reproduction.	Have students practice proofing procedure under supervision.
	Clean the form and press.	
• Proofreading	Interpret standard proof marks.	Distribute hand-outs of standard proof marks.
		Project transparency of the hand-outs, masked to show only one mark and its meaning at a time.
	Proofread copy, indicating corrections with standard proof marks.	Give each student a rough layout containing errors. Allowing use of the hand-out of standard proof marks, have students "proof" the copy.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
— Imposition and Lock-up • Hand fed • Auto platen • Flatbed cylinder simple form multipage form work and turn work and tumble work and twist multicolor form	Impose and lock the job in conformance with job specifications and production requirements. Make folding dummy to indicate type of imposition.	Distribute hand-out on basic kinds of lock-up, and basic kinds of imposition. Demonstrate the procedures for locking a simple form in square lock-up and chaser on the hand fed and power fed platens and flatbed cylinder. Have students practice lock-up and imposition procedures, under supervision.
o Offset		
— Layout • Thumbnail sketch • Rough • Comprehensive • Dummy	Identify by name, representative samples of sketches and layouts. State the identifying characteristics of each. Draw a thumbnail sketch and prepare a rough, comprehensive, and dummy layout.	Define the term "layout." Distribute individual samples. Use projected transparencies to illustrate the identification points of each type layout. Explain the purpose of, and need for, each type. Demonstrate the use of layout tools, such as the ruling pen and straight edge. Have students produce sketch and layouts for specific jobs.
— Composition • Strike on manual electric computerized	State the meaning of the term "increments." Apply proportional spacing to job requirements.	Distribute hand-outs or charts of type samples and increment charts.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
	Set up strike-on composer to measure, flush left and flush right.	Demonstrate proportional spacing procedure.
	Produce justified straight matter, hanging indentations, runarounds, and tabular matter in accordance with job specifications.	Use charts or projected transparencies to show the difference between copy produced on the standard typewriter and that set on the strike-on composer.
• Phototype manual electric computerized	Describe the operation of the stabilizing machine.	Provide a copy of the manufacturer's instruction handbook to each student. Using the stabilizer and projected transparencies, demonstrate preparation, use, and shutdown of the machine.
	Add chemistry, feed paper, and set up the machine.	
	Photo-compose a specified job.	
	Clean and maintain the stabilizer machine.	Note the difference between the stabilize process and conventional tray device method, and that copy is not permanent.
		Emphasize eye safety in cleaning procedure
• Press-on type	List the various press-on type alphabets available.	Display samples of the various press-on sheets.
	Compose provided copy, using press-on alphabets, which will meet all job requirements.	Demonstrate the procedure generally followed by commercial artists in using press-on type.
		Assign students jobs which will provide practice in press-on composition.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Repro proof	Demonstrate the handling and waxing of the repro proof.	Demonstrate the procedures in handling and waxing the repro proof. Relate the procedures to paste-up.
• Camera-ready copy	List the three kinds of camera-ready copy.	Display examples of repro proof, paste-up, and previously printed copy.
	Produce repro proof of camera-ready copy.	
— Proofreading	Interpret standard proofreading marks.	Distribute copies of Standard Proof Marks chart.
	Add tissue to camera-ready copy.	Project transparency of copy containing errors. Proof mark on overlay.
	Proofread copy, indicating errors by standard proof marks.	Display proof, containing errors, and overlay sheet. Explain the purpose of the overlay and demonstrate its use.
		Provide copy for students to proofread.
— Photomechanical	Name the tools used in preparing a photomechanical, and describe their use.	Demonstrate the use and care of layout tools.
• Layout	Rule guidelines for a photomechanical.	
• Paste-up	Describe the procedures of paste-up by wax and by rubber cement.	Demonstrate thinning of rubber cement to needed consistency.
rubber cement wax	Rule and apply such typographic and line photographic elements as bleeds, line, combinations, reverses, rule forms, Ben Day tints, and windows.	Demonstrate use and care of waxer, and replenishing of wax.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
		Distribute copies of manufacturer's handbook for Ben Day tints.
• Overlays	State the conditions and reasons for use of overlays.	Demonstrate overlay procedure. Discuss.
	Apply single and multiple overlays to a base paste-up, using register marks.	
• Technical information	List the various kinds of technical information necessary for production.	Describe the kinds of information which may be needed.
	Indicate on the paste-up such job specs as color swatches, paper samples, folding instructions, tint information, and production information.	Demonstrate how the information is indicated.
• Camera-ready copy	Layout and paste-up single or multi-color jobs from a rough layout and production information, using overlays if necessary, and scale various elements to proof.	Display a finished layout. Explain the elements. Demonstrate how the layout was completed.
• Proofing	Make photocopy of the mechanical.	Demonstrate photocopying procedures.
	Proof for photographic and typographic element position.	
• Scaling proportional scale	Enlarge and reduce photographic and typographic elements by use of the proportional scale.	Distribute hand-outs explaining the proportional scale. Demonstrate the procedure for enlarging copy and for reducing copy.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
diagonal method	Enlarge and reduce photographic and typographic elements by the diagonal method.	Distribute hand-outs explaining the diagonal method. Demonstrate procedures. Assign scaling problems requiring use of each method.
o Darkroom Operations		
— Chemicals	Name and describe the functions of developer, stop bath, and fixer.	Discuss the process of developing, including the function of the chemicals and their safe use.
• Purpose developer stop bath fixer	Describe the potential hazards in working with photography chemicals.	Display typical container labels. Discuss the manufacturer's instructions.
• Procedure mixing replenishing disposal	Produce developer, stop bath, and fixer to specifications. Maintain solution strength. Dispose of "used up" solutions. Conform habitually to prescribed procedures.	Demonstrate the process of mixing, use, and disposal of photographic chemicals. Emphasize safety procedures. Assign jobs requiring the mixing, maintaining, and disposal of these chemicals.
— Film	Visually identify the various ortho films, state their uses, and describe the advantages and disadvantages.	Display samples of ortho films. Describe the properties and uses.
• Types		
• Selection	State the film which should be used for specified applications.	

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
	Identify and state the function of the various layers on a film layer diagram.	Project a transparency of the film layers of high-contrast film. Distribute hand-outs of cross-section view of film. Discuss — emulsion protective layer — emulsion light-sensitive particles of silver halides — bases — antihalation coating
	State and relate the color range of the human eye, blue sensitive film, ortho film, and pan film.	Describe the color sensitivity of the human eye. Relate to the sensitivity of the various films.
• Developing factors — temperature control — agitation — safelights methods — sight — time-temperature — automatic processor	Describe the development processes.	Distribute hand-outs illustrating the manual and automatic processor methods.
	State the importance of temperature control and agitation.	Discuss safelights. Explain why the specified color light must be used with different type films.
	Develop a line shot by sight, and by time-temperature.	Demonstrate developing of a line shot by the manual methods, through use of a gray scale.
	Develop film in an automatic processor.	Demonstrate operation of an automatic film processor.
• Drying	Dry the film.	Demonstrate film drying.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
— Contact Printing	Identify, by name, the parts of the contact printing frame and describe their functions.	Distribute hand-outs diagramming the parts of the contact frame. Discuss the functioning.
	Clean the glass, position photographic elements, bring frame to vacuum, and give elements required exposure.	Demonstrate procedure for operating the contact printer.
	Make negatives, positives, spreads, shrinks, and duplicates on either paper or film.	Assign students jobs which will develop ability in contact printing.
— Photomechanical Transfer	Identify, by name, the principle parts of the P.M.T. processor and describe their functions.	Distribute P.M.T. instruction booklets. Use the processor as a model in discussion of function, procedure, and safety measures.
	Make line shots, half-tones, and plates on P.M.T. by contact or camera operation.	Demonstrate use of the P.M.T. processor, P.M.T. negative paper, and P.M.T. reflex paper.
		Emphasize value of P.M.T. in proofing and layout tasks.
		Assign jobs which will develop students' ability in P.M.T.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Camera Operation	*The student will be able to:*	
— Set up	Identify, by name, the main parts of the process camera and describe the functions of each.	Distribute hand-outs of nomenclature of the horizontal process camera.
• Lights		
• Lens		Compare common parts of the horizontal process camera and hand held camera.
• Copy board		
• Control panel	Set up the camera for specified jobs.	Demonstrate the set-up process.
• Size control		
• Ground glass		Assign students, in pairs, to set up for line shot — enlargement — reduction — same size
• Vacuum back		
— Exposure		
• Line	Make test exposures for a line shot.	Introduce the factors which must be controlled to produce good negatives — copy quality — lighting — exposure time — f-stop — focus — enlargement or reduction — film type — developer — developer time — processing temperature
	Determine best lens setting and exposure time from evaluation of test exposures.	
	Set up camera for line shot.	

CONTENT	OBJECTIVE *The student will be able to:*	TEACHING SUGGESTIONS
		Indicate that the factors vary from shop to shop.
	Shoot and develop negatives acceptably close to original when given copy, lens setting, exposure time, and gray scale.	Discuss the procedure for determining basic exposure. Introduce the gray scale. Demonstrate making of test exposures. Have students practice making and evaluating test exposures as a means to determining best lens setting and exposure time for line shot.
• Half-tone		
densitometer — scale (BDR) — electronic	Evaluate the densities of a continuous tone print by use of a densitometer.	Demonstrate methods of determining the current density of a continuous tone print, using Densitometer Reflection density and Kodak Reflection density.
contact screen bump, flash, main	Calibrate the camera for size, lens setting, and exposure time. Produce a print which closely approximates the densities, high light, shadow, and middle tone area of the original.	

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Filters	Describe the function of filters.	Discuss the need for filters, and how they work.
	List the common filters, by name and identification.	Compare copy which does, and does not, need filter use.
	Determine which copy requires the use of filters.	Demonstrate use of the filter chart to select several filters.
	Evaluate copy by use of the filter chart.	
	Select filters to intensify or drop out color, and insert in filter holder.	Demonstrate insertion and removal of filters in filter holder.
	Produce colored copy which meets job specifications.	Shoot several kinds of colored copy. Compare.
• Duotones types screen angles tone scale	Differentiate between true duotone and false duotone.	Distribute printed samples of duotones.
	Describe the process of shooting duotones.	Discuss true duotones and false duotones, screen angles, choosing the second color, tone scales and exposure, and choosing the technique.
	Shoot two half-tones of a continuous tone print, angled 30° from each other, each correctly exposed.	Demonstrate shooting a duotone.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Color separation	Describe the procedure used to obtain color separation, by camera or contact methods.	Explain and compare the direct and the indirect methods of separation.
— Stripping	Lay out and strip up line work, combinations, and multicolor as required for the specific press and job specifications.	Demonstrate stripping up a flat, using the manufacturer's specifications for a specific press.
• Masking sheet ruled unruled — ruling marks		Repeat the demonstration until all possible operations have been shown.
• Cropping		Assign jobs which will develop student abilities to perform all stripping operations.
• Scribing		
• Positioning		
• Windows		
• Opaquing		
• Dot etching		
• Registration multipage multicolor step and repeat multiburns		

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Tint screens	Choose the screen and/or percentage required to meet job specifications.	Display tint screens on the light table, alongside samples of printed tint.
		Demonstrate use of manufactured tint screen spec sheets for determining shades desired.
	Angle tint screens when using more than one.	Demonstrate procedure for angling tint screens on separate flats.
• Proofing blueprints brownprints color key P.M.T.	Name the various proofing mediums, and describe the advantages and disadvantages of each.	Display samples of various proofing mediums. Indicate the identifying points of each.
	Visually identify various samples of proofing.	Demonstrate techniques for proofing jobs. Discuss the characteristics of each medium.
	Proof a job by each available medium.	
— Platemaking (presensitized)	Identify, by name, the working parts of the platemaker, and describe the functions of each.	Use the platemaker as an aid in discussing its operation.
• Types of plates coatings grained/ungrained pin bar straightedge slotted serrated	Describe the differences between grained and ungrained plates, and additive and subtractive coatings.	Display the various types of plates, indicating points of identification, and discuss the particular uses of each.
	Visually identify type of plate and coating.	

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Preparation change arcs and lamps cleaning the glass setting controls plate handling	Prepare the platemaker for operation. Select the type plate required.	Demonstrate platemaker preparation, emphasizing key points, including safe procedures for changing arcs and lamps. Demonstrate the platemaking procedure.
• Exposing	Determine and set correct exposure.	
• Developing subtractive additive	Develop subtractive plates and additive plates, according to manufacturer's directions.	Distribute hand-outs describing developing procedures. Demonstrate procedure.
• Correcting additions deletions — liquid — paste	Evaluate the plate and make necessary corrections.	Display uncorrected plates. Indicate corrections to be made. Demonstrate correction procedures.
• Preserving handling storing	Describe handling and storing of plates to prevent damage. Store the plates for future use.	Discuss procedures in handling developed plates, and methods of storing.

TERMINAL OBJECTIVE

On terminating required study of this section, the student will be able to:

Set up, lubricate, and ink,
Run a job,
Wash-up,
at least one type of letterpress.*

Set up, lubricate, ink and dampen,
Run a job,
Set up for, and perform, such special operations as —
- Perforating
- Scoring
- Numbering
- Slitting
- Punching

Wash-up and prepare for subsequent use,
at least one type of offset press.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Letterpress*	*The student will be able to:*	
— Types of Press • Hand fed platen • Power fed platen • Flatbed cylinder	Differentiate among the types of letterpress. Identify, by name, the main parts of each type of letterpress, and describe their functions. Describe the advantages and disadvantages of each type.	Distribute hand-outs illustrating the three types of letterpress. Project transparencies diagraming construction of each. Describe their working principles, advantages, and disadvantages.
— Platen; Hand • Press preparation • Lubricating	Prepare and lubricate the handfed platen press in conformance with the manufacturer's directions and specifications.	Distribute hand-outs of specifications and procedures for preparation, operation, and maintenance.
• Inking • Inserting chase • Adjusting grippers	Change packing, run up ink, and pull an impression.	Project transparencies of diagrams of preparation, operation, and maintenance procedures on hand fed platen press. Discuss the procedures.
• Makeready change tympan prove tympan place guidepins pull proof underlay	Makeready and get position.	Demonstrate all procedures on the press.
• Operating fan stock feed rhythm delivery	Run a job, maintaining position and color to field minimum quality standards or better.	Assign students jobs which will develop ability to produce acceptable printed materials on this press.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Wash-up	Clean the press to a condition of complete readiness for subsequent job.	
— Platen; Automatic	Prepare and lubricate the automatic platen press in conformance with the manufacturer's directions and specifications.	Distribute hand-outs of specifications and procedures for preparation, operation, and maintenance.
• Press preparation		
• Lubricating		
• Filling ink fountain	Load and adjust feeders, change packing, and run up ink.	Project transparencies of diagrams of preparation, operation, and maintenance procedures on the automatic platen press. Discuss the procedures.
• Settings feeder delivery		
• Trial run	Pull an impression.	
• Inserting chase		
• Makeready pull proof underlay overlay	Makeready and get position.	Demonstrate all procedures on the press.
• Obtaining position		
• Setting ink fountain	Adjust delivery .	
• Operating registration	Run a job, maintaining position and color to field minimum quality standards or better.	Assign students jobs which will develop ability to produce acceptable printed materials on this press.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Wash-up	Clean the press to a condition of complete readiness for a subsequent job.	
— Flatbed cylinder	Prepare and lubricate the flatbed cylinder press in conformance with the manufacturer's directions and specifications.	Distribute hand-outs of specifications and procedures for preparation, operation, and maintenance.
• Press preparation		
• Lubricating		
• Filling ink fountain	Load and adjust feeders, change packing, and run up ink.	Project transparencies of diagrams of preparation, operation, and maintenance procedures on the flatbed cylinder press. Discuss the procedures.
• Settings feeder conveyor board delivery ink system		
• Insert chase	Pull an impression.	
• Makeready pull proof adjust side guides underlay overlay	Makeready and get position.	Demonstrate all procedures on the press.
• Obtaining position		
• Setting ink fountain	Adjust delivery.	Assign students jobs which will develop ability to produce acceptable printed materials on this press.
• Operating registration color	Run a job, maintaining position and color to field minimum quality standards or better.	
• Wash-up	Clean the press to a condition of complete readiness for a subsequent job.	

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Offset	*The student will be able to:*	
— Types • 3-cylinder • 2-cylinder	List the types of offset press, describe the differences in operation, and state the advantages and disadvantages of each.	Distribute diagrams of each press, on which the principal parts are labelled. Project a transparency of each diagram, discussing the working principles and inherent advantages of that type offset.
— Duplicators • Preparation • Lubrication	Prepare and lubricate the duplicator in conformance with the manufacturer's directions and specifications.	Distribute hand-outs of specifications and procedures for preparation, operation, and maintenance.
• Settings feeder conveyor board delivery impression cylinder	Set feeder and delivery as required by the job, and make a trial run.	Project transparencies of diagrams of preparation, operation, and maintenance procedures. Discuss the procedures.
• Trial run		
• Inking	Set up the inking and dampening system.	
• Prepare dampening mix fountain solution fill water fountain moisten dampeners		Demonstrate each procedure on the duplicator as a separate step.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Attach plate check roller settings ink form water form roll up plate, dry check plate-to-blanket	Attach the plate, wash the blanket, clean the plate, and roll up the plate.	Assign students to jobs which allow development of ability to perform each step in duplicator use as a separate function.
• Wash the blanket • Clean the plate • Roll up plate		Demonstrate duplicator production of printed materials as a single preparation-to-wash up process.
• Pull proof • Obtain position • Set ink fountain	Pull a proof, obtain position, and set the ink fountain.	
• Operation registration color	Run a job, maintaining position and color to field minimum quality standards or better.	Assign students jobs which will develop ability to produce acceptable printed materials on the duplicator. Jobs should require one or more special operations until student's proficiency includes all possible operations.
• Special operations perforating scoring numbering slitting punching	Set up the duplicator to perform such special operations as a job requires.	

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Wash-up	Clean the duplicator to a condition of complete readiness for a subsequent job.	
• New blanket (when needed) pumice "mike" thickness attach to cylinder	Discuss pinbar, serrated, sticky-back blankets, and hole punching, use of blanket fix to repair a hole, and use of packing. Determine need to replace the blanket. Prepare and install a new blanket.	Teach use of the micrometer if necessary.
— Presses		
• Lubrication	Lubricate the press in conformance with the manufacturer's directions and specifications.	Distribute hand-outs of specifications and procedures for preparation, operation, and maintenance.
• Settings feeder — sheet — stream — web conveyor board head stops side guide drop bar delivery offset spray skeleton wheel back and side jogger impression cylinder	Set up the press as required by the job, and make a trial run.	Project transparencies of diagrams of preparation, operation, and maintenance procedures. Discuss the procedures. Demonstrate each procedure on the press as a separate step.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Trial run		
• Ink the press • Prepare dampening type — conventional — Dahlgren — microflo	Set up the inking and dampening systems.	Assign students to jobs which allow development of ability to perform each step in press use as a separate function.
• Attach plate check roller setting — ink form — water form — intermediates roll up plate dry check plate/blanket pressure	Attach the plate and check settings. Roll up the plate dry, and check plate-to-blanket pressure.	
• Wash the blanket • Clean the plate • Pull proof	Wash the blanket, clean the plate, and pull a proof.	Demonstrate production of printed materials on the offset press as a single lubrication-to-wash up process.
• Obtain position • Set ink fountain	Obtain position and set the ink fountain.	
• Operation registration color	Run a job, maintaining position and color to field minimum quality standards or better.	Assign students jobs which will develop ability to produce acceptable printed materials on the offset press.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
Special operations perforating scoring numbering slitting punching	Set up the press to perform such special operations as a job requires.	Jobs should require one or more special operations until the student's proficiency includes all possible operations.
Wash-up	Clean the press to a condition of complete readiness for a subsequent job.	
New blanket	Determine need to replace the blanket.	
mount on bars pumice "mike" thickness attach to cylinder	Prepare and install a new blanket.	Be sure that the student can accurately measure with the micrometer.

TERMINAL OBJECTIVE

On terminating required study of this section, the student will be able to:

Set up, run jobs, and perform routine maintenance on the —
Paper cutter,
Folder,
Collator,
Paper drill,
Stitcher,
Plastic punch and binder,
Perfect binder,
Padding press.

Perform the invoicing, storing and inventorying, and in-house distributing duties of the Receiving Department.

Perform the packaging, distributing, and recordkeeping duties of the Shipping Department.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Paper Cutter	*The student will be able to:*	
— Nomenclature	Identify by name, the main parts of the paper cutter and describe the function of each.	Distribute hand-out diagrams of the paper cutter.
— Safety Systems	Describe the safety systems incorporated into the paper cutter, and the hazards which they guard against.	Emphasize the importance of unvarying observance of safety procedures and use of safety systems. Demonstrate operation of the paper cutter with total emphasis on the functioning of the safety systems.
— Preparation		
• Figuring stock dimensions	Figure stock dimensions, and make a cutting diagram if needed, when given the number of finished copies.	Illustrate sample stock dimensions. Demonstrate making a cutting diagram.
• Estimating quantities	Estimate the quantity of stock needed to produce a given number of finished copies.	Demonstrate the estimation of quantities from basic sheet sizes. Assign practice jobs in figuring dimensions and quantities.
• Readying stock cutting capacity wireside, feltside jogging	Separate the stock into sections no larger than the capacity of the cutter.	Discuss disadvantages of overloading.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
— Operation	Place stock accurately in the cutter, and clamp.	Demonstrate placing stock in cutter, setting gauge, and clamping.
• Reading scales		
• Setting back gauge		
• Actuating clamp		
• Engaging knife	Cut and remove stock in conformance with all operational and safety procedures.	Demonstrate operation of the cutter with emphasis on correct procedure and accurate, efficient use.
• Removing stock		Assign student jobs which will develop proficiency in safe operation of the paper cutter.
— Storing Knife	Set up cutter in between-use condition.	Discuss dual purpose of storage condition: protection of workers; protection of blade.
o Folder		
— Nomenclature	Identify by name, the main parts of the folder and describe the function of each.	Distribute hand-out copies of the manufacturer's diagram.
— Settings	Adjust the folder to make a single fold.	Distribute hand-outs which illustrate settings for the various folds.
• Feeder	Adjust the folder to make a right angle fold.	
• Conveyor		Demonstrate setting the folder for each fold. Emphasize the importance of accuracy.
• Side guides	Adjust the folder to make an accordion fold.	

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Plates		
• Right angle	Adjust the folder to make a French fold.	
	Adjust the folder to make a parallel fold.	Assign students jobs which will develop ability to set up for folding.
— Special Operations	Set up the folder to score, perforate, slit, cut, and glue, singly or in possible combinations.	Distribute hand-outs illustrating use of attachments to perform special operations.
• Scoring		
• Perforating		
• Cutting		Demonstrate setting up the attachments.
• Gluing		
• Slitting		
— Operation	Run jobs on the folder which require all of the various folding and special operations.	Demonstrate operation of the folder for each fold and special operation.
		Assign students jobs which will develop proficiency in folder operation.
o Collator		
— Nomenclature	Identify by name, the main parts of the collator and describe the function of each.	Distribute hand-out diagrams of each type collator.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
— Classifications		
• Automatic rotary conveyor	Describe the differences among the various types of collators.	Project transparencies of the diagrams. Discuss the functioning of each type.
• Semiautomatic		
— Loading	Adjust the collator to accept the job.	Distribute copies of the manufacturer's handbook.
• Adjusting for size		
• Adjusting sheet detectors		Demonstrate the loading of various sizes and weights to be collated.
— Operation		
• Setting speed control	Adjust the collator to run the job.	Demonstrate setting the collator to run the job.
• Setting air feed		
• Setting delivery mode		
— Special Automatic Operations	Adjust the collator to fold, stitch, punch, and trim, singly or in possible combinations.	Demonstrate operation of the collator, with and without special operations
• Folding		
• Stitching	Run jobs on the collator which require all of the various collating and special operations	Assign student jobs which will develop proficiency in collator operation.
• Punching		
• Trimming		

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Paper Drill	*The student will be able to:*	
— Nomenclature	Identify by name, the main parts of the paper drill and describe the function of each.	Distribute hand-out diagrams of the paper drill.
— Drill Heads	Select the size drill required by job specifications.	Project a transparency of a drill. Explain how it cuts. Describe the size range of drills, and the sizing system.
— Settings • Drill heads • Paper guides and stop	Set paper guides and stop, and drill heads in conformance with a given pattern.	Demonstrate selection of drill size and setup of the paper drill from a sample pattern.
— Special Operations • Round corners • Tabbing • Slitting	Adjust the paper drill to round corners, tab, and slit, singly and in possible combinations.	Demonstrate setting up the paper drill to perform special operations.
— Operation	Run jobs on the paper drill which require all of the special operations, the product to match the given pattern and meet job specifications.	Demonstrate operation of the paper drill in conformance with various job requirements. Emphasize safety aspects. Assign student jobs which will develop proficiency in paper drill operations.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Stitcher	*The student will be able to:*	
— Nomenclature	Identify by name, the main parts of the stitcher, and describe the function of each.	Distribute hand-out diagrams of the stitcher.
— Types of Binding	Name, describe, and identify the types of binding.	Display samples of the types of binding possible on the stitcher.
• Wire size	Select the size wire required for a job.	Illustrate the differences in wire sizes. State the applications of the different sizes.
— Settings	Adjust the stitcher to make a saddle stitch.	Demonstrate setting the stitcher to make the different types of binding.
• Saddle	Adjust the stitcher to make a side stitch.	
• Side		
back gauge		
• Thickness		
— Operation	Run jobs on the stitcher which require all possible types of binding.	Demonstrate operation of the stitcher in conformance with sample job requirements. Emphasize safety aspects.
		Assign student jobs which will develop proficiency in stitcher operation.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Plastic Punch	*The student will be able to:*	
— Element Choice	Choose the size binding required by a given job sample.	Display binding sizes. Discuss factors in choosing a size.
— Settings • Thickness • Side guide	Set the side guide and punch to job specifications.	Demonstrate setting the punch for various job requirements.
— Operation • Manual • Automatic	Run jobs manually and automatically.	Demonstrate operation of the plastic punch, both manually and automatically. Assign student jobs which will develop proficiency in manual and automatic operation of the plastic punch.
o Plastic Binder		
— Settings • Element • Timer	Set element opening and timer as required by given job sample.	Describe the purpose of the binder. Demonstrate the settings and adjustments necessary for various job requirements.
— Operation • Manual • Automatic	Run jobs manually and automatically.	Demonstrate manual and automatic operation of the plastic binder. Assign student jobs which will develop proficiency in manual and automatic operation of the plastic binder.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Perfect Binder	*The student will be able to:*	
— Types • Heat sealed • Drilled comb selection	Name, identify, and describe the types of perfect binder. Choose the type appropriate to a given job sample.	Describe and discuss the types of perfect binder, and the considerations for selection.
— Setting • Side guide	Set the side guide as required by the job.	Demonstrate setting of side guide.
— Operation	Run a job on the perfect binder as required by the job sample.	Demonstrate operation of the perfect binder — both heat sealed and drilled — to bind as required by a job sample. Assign student jobs which will develop proficiency in each type of perfect binding.
o Padding Press		
— Preparation	Inspect press, and clean if necessary.	Describe the condition of the press before padding, explaining why it must be clean.
— Engage Front Guide	Jog and position stock.	
— Lock and Compress Top Plate	Anchor sheets in position.	Demonstrate loading of the press.
— Cement • Conventional • Carbonless	Determine cement type from given job sample and requirements. Apply cement.	Discuss the two types of padding cement, their characteristics and applications. Explain why separate brushes should be used for carbonless cement and conventional cement. Demonstrate application.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
— Release Stock — Separate Pads	Release the stock from the press and separate into individual pads.	Demonstrate release of padded stock, and separation into individual pads.
— Clean up	Return tools and equipment to a condition of readiness for subsequent use.	Assign student jobs which will develop proficiency in padding according to given specifications.
o Materials Handling		
— Receiving		
• Invoices	Interpret invoices. Determine accuracy and completeness of invoiced shipment.	Distribute copies of several sample invoices. Project a transparency of a standard invoice form. Discuss interpretation of the information.
• Storage	Describe standard graphics occupations practices for storing any specified supplies and materials.	Emphasize the importance of positioning and ambient temperature and humidity, as well as ease of access, in storing materials.
stock rotation	Explain the importance of rotating stock, and describe a plan of stock rotation.	Explain "shelf life."

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Inventory records	Maintain accurate inventory records.	Distribute sample materials control forms. Demonstrate use. Assign two-student teams to inventory parts of shop supply.
maintaining supply	Maintain supplies at predetermined levels.	Discuss the means of determining reserve materials levels. Display various order forms and demonstrate writing orders.
• In-house distribution	Describe a system of in-house distribution of materials when given necessary organizational data for a sample plant.	Distribute hand-outs of the shop floor plan. Show in-house distribution and explain reasoning. Distribute hand-outs of the floor plan of a typical industrial shop and its inventory. Have students devise distribution plans.
— Shipping		
• Packaging wrap box/bag crate	Describe the considerations which determine how a printing job will be packaged. Package various jobs for shipping.	Display samples of finished jobs, packaged for shipment. Demonstrate packaging procedures.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
label	Label the packaged jobs.	Distribute blank labels. Project a transparency of a label. Discuss information required while demonstrating completion. Have students interpret information on labels on finished, packaged jobs.
• Distribution mail freight	Provide for shipment of the job as specified on the job ticket.	Describe and compare the advantages and disadvantages of mail vis-a-vis freight shipment.
• Records	Maintain accurate and complete shipping records.	Distribute sample shipping record forms. Discuss the information to be recorded. Emphasize the importance of complete and accurate records in handling customer complaints. Have students complete records for shipment of hypothetical orders.

TERMINAL OBJECTIVE

On terminating required study of this section, the student will be able to:

Perform preventive maintenance,
Troubleshoot,
Complete minor repairs,
on all equipment on which that student is recorded as having achieved operating proficiency.

Maintain the physical plant, and its personnel, in conformance to industrial standards of orderliness, cleanliness, and safety.

Perform the duties which comprise the business procedures of estimating, billing, and advertising.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o **Maintenance**	*The student will be able to:*	
— **Equipment**		
• **Preventive** cleaning lubricating inspecting — daily — monthly — annually	Clean and lubricate each piece of equipment, in conformance with the manufacturer's directions and specifications.	Discuss maintenance of each piece of equipment as it is introduced. Demonstrate maintenance procedures to each student *as part of* proficiency in operation.
	Perform periodic maintenance inspections according to manufacturer's directions.	Emphasize that maintenance of equipment is *evaluated* as part of the job; that it is reflected on each student's proficiency chart.
	Habitually replenish supplies, clean, and lubricate equipment on which he has finished a job.	
• **Corrective** troubleshooting cleaning adjusting repair/replace lubricating	Describe the indications of need for maintenance of any specified piece of equipment.	Demonstrate corrective procedures as the need arises.
	Use the manufacturer's manual to troubleshoot equipment.	Be sure the students know how to use the manufacturer's manual in troubleshooting and maintenance.
		Discuss equipment trouble symptoms as opportunity provides.
• **Procedure** disconnect power perform operations cycle manually connect power	Clean, adjust, lubricate, and make minor repairs to equipment, in conformance with the manufacturer's manual and all applicable safety regulations.	Emphasize the importance of stopping to troubleshoot if anything seems "not quite right."
		Stringently enforce all safety regulations.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
— Plant		
• Orderliness	Explain in own words, any shop regulation or procedure, and state the reasons for its existence.	Compile shop policies and standard procedures as a student handbook. Provide a copy to each student on acceptance for instruction.
• Safety	Identify conditions which are unsafe, unsanitary, or disorderly.	Distribute hand-outs of the shop floor plan showing location of various areas, equipment, supplies, power switches, fire extinguishers, and exits.
• Sanitation	Correct and/or report such conditions, as indicated in the student handbook.	
— Personnel	Conform to set standards of behavior, materials and equipment utilization, and storage procedures and organization.	Assign students in rotation as "foreman" of various shop areas, with personal responsibility for safety, cleanliness, and orderliness.
• Graphics	Use personal safety devices and clothing as required.	Be constantly alert for potentially hazardous situations, such as storing raw chemicals in the dark room and student access to acids for "experimental" mixing.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Utilization of other trades machinist electrician carpenter painter others	List the other trades usually part of large plant maintenance departments, and describe the general employment of each.	Describe the *Dictionary of Occupational Titles.* Quote descriptions of a few building maintenance trades.
	Explain the advantages of having specific maintenance operations performed by those trained to do so.	Discuss the financial, safety, and operational aspects of calling on other trades to perform work in their skill area.
	Describe the potential hazards — to both personnel and property — in "do it yourself" maintenance.	
o Business Procedures		
— Estimating	Define the terms used in estimating.	Discuss the importance of accurate estimating.
• Labor costs • Materials costs • Fixed overhead • Deadlines	List the available commercial guides to estimating.	Distribute sample estimate sheets. Project a transparency of the sheet. Explain the factors to be considered in estimating. Demonstrate the process of estimating and scheduling a sample job.
	Explain the importance of computing reasonable estimates and base rates, and stating realistic deadlines.	
	Prepare a justifiable estimate and realistic schedule for a sample job.	Have students complete a sample job estimate.
		As each student becomes proficient in a specific graphics process, require estimation and scheduling of assigned jobs.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
— Billing		
• Recordkeeping	Make neat, legible, and accurate entries in the record book.	Emphasize the critical importance of accuracy and legibility in keeping records, billing, and issuing receipts.
• Forms billheads statements delinquency reminders receipts	Compute and add sales tax. Neatly, legibly, and accurately enter given information on standard business forms.	Use the overhead projector, transparencies of forms and ledgers, and grease pencil to demonstrate recordkeeping and completion of forms. Distribute sample forms and ledger pages. Provide data for student practice in recordkeeping and form completion.
— Advertising		
• Media • Direct mail promotion	Describe the advantages and disadvantages of each vehicle for advertising a graphics business.	Compare the various means of advertising as to effectiveness and cost-effectiveness.
• Community service	Describe the common community service activities which a graphics business can provide or participate in, which project the desired image.	Discuss community service as a social responsibility, and as a means of improving business.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
	The student will be able to:	
• Customer satisfaction	Describe the elements which contribute to customer satisfaction, and its importance as advertising.	Explain how a friendly but businesslike manner, prompt delivery, and accurate billing are as important as a high quality product in attaining customer satisfaction. Emphasize that while a satisfied customer is not a substitute for advertising, a dissatisfied customer may more than offset the benefits of advertising.

126

127

TERMINAL OBJECTIVE

On terminating required study of this section, the student will be able to:

Prepare a resumé,
Complete standard job-application forms,
Demonstrate those qualities which are known to create a favorable image in job interviews.

Evaluate various job offers for relative superiority of working conditions, compensation, and job security.

Prepare for advancement in the graphics industries through acquired knowledge of the various sources of inservice education.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Applying for a Job	*The student will be able to:*	
— Resumé	Compose a clear, concise, informative resumé.	Discuss the writing of a resumé.
• Statement		
• Credentials		Have each student prepare a resumé, then critique the paper with each student, privately.
• Portfolio		
— Application Forms	Legibly complete any given standard job application form.	Distribute a standard form. Discuss the kinds of information which should be entered.
• Personal history		
• Family history		Have students complete the form, and one other which is organized differently.
• References		
— Job Interview	Describe the factors which favorably and unfavorably affect employment interviewers.	Discuss the job interview as the means by which an employer chooses from applicants whose resumés and applications are equally acceptable.
• Personal appearance		
cleanliness attire posture		
• Attitude	Explain why the "attitude" which the applicant projects is so important.	Play the role of applicants displaying both good and poor characteristics, or have students role play applicants for a job.
promptness courtesy truthfulness realistic self-confidence		
• Conduct	Demonstrate desired conduct and appearance during a simulated job interview.	Emphasize that the individual applicant has no "right" to be hired, but must "sell himself" to the interviewer as a better choice than other applicants.
speech manners		

CONTENT	OBJECTIVE	TEACHING SUGCESTIONS
o Evaluating Job Offers	*The student will be able to:*	
— Working Conditions • Physical • Labor-Management relations • Peer group compatibility	List the aspects of working conditions which a job applicant should investigate. Describe the importance of these aspects to a new employee.	Discuss the many factors which must be considered when choosing between several job offers.
• Work schedule standard nonstandard — nights — weekends — holidays	State why it is important to know the work schedule of an offered employment.	Anecdotes from the teacher's own industrial experience should be especially effective.
• Union/Nonunion shop	Compare the respective advantages of unionized and nonunionized employment.	
— Compensation • Wages • Fringe benefits • Advancement	Describe current levels of compensation in local union shops and typical nonunion shops.	Emphasize the two-edged nature of the strict seniority system, as a roadblock to the more capable as well as a guard against favoritism.
— Job Security • Personal • Company strength and philosophy	Describe the importance of job security from the viewpoints of personal tenure in the job, and probable continued existence of the job itself.	Currently, the foundering of small businesses and the moving of large ones to areas seeming to offer more advantageous tax and wage scales are greater factors in job security than ethnic or sexual discrimination. Emphasize that most workers who are discharged for cause, were unable to work in harmony with others.

CONTENT	OBJECTIVE	TEACHING SUGGESTIONS
o Inservice Education — Apprentice Programs — In-Plant Programs — Adult Education — College Extension — Manufacturer's Seminars — Trade Journals — Military Service Schools	*The student will be able to:* Describe the various means, formal and informal, by which persons employed in a graphics occupation may increase their knowledge and skills.	Discuss the various school, organizational, and continuing resource programs available. Display advertising and informational materials issued by these sources.

RESOURCES

Books

Carlsen, Dervey E. *Graphic arts;* rev. ed. Peoria, IL. Bennet Books. 1977.

Cogoli, John E. *Everything to know about photo-offset.* Philadelphia. North American Publishing Company. 1973.

_____ *Photo-offset fundamentals;* rev. ed. Bloomington, IL. McKnight Publishing Company. 1973.

Dennis, Ervin A. & Jenkins, John D. *Comprehensive graphic arts.* New York. Howard W. Sams & Company. 1975.

Silver, Gerald A. *Printing estimating.* Chicago. American Technical Society. 1970.
(Study guide and estimating forms are available)

Periodicals

Graphic arts monthly. Technical Publishing Company, 222 South Riverside Plaze, Chicago, IL, 60606.

Inland printer. Maclean & Hunter Publishing Corp., 300 West Adams Street, Chicago, IL, 60606.
Monthly.

Newsletter for graphic arts and photography instructors. Graphics Markets and Professional and Finishing Markets Divisions, Eastman Kodak Company, Rochester, NY 14650. Triannually. Free to teachers of graphics and photography in the United States and Canada.

Catalogs

Eastman Kodak Corporation. *1977 Index to Kodak information;* #L-5. Rochester, NY. The Corporation. 1977.
Available through Kodak dealers.

Films

E.I. DuPont de Nemours & Co. *We used to call it printing.* 16 mm, sound, Wilmington, DE. DuPont Motion Picture & Audiovisual Service.

International Typographic Composition Association. *Typography today.* 16 mm, sound. Washington. The Association.

Filmstrips

Cogoli, John E. *Photo-offset filmstrips;* Nos. 7145 through 7151. 14 filmstrips of 35-50 frames each. Color. Seven casettes. Bloomington, IL. McKnight Publishing Company.

Transparencies

DCA Educational Products, Inc. *Graphic arts.* Two volume set of 34 and 61 transparencies. Philadelphia. The Corporation.

Miscellaneous

Information on scholarships, career opportunities, technical information, new technology, trade shows, seminars and workshops may be obtained form the —

Graphic Arts Technical Foundation
4615 Forbes Avenue
Pittsburgh, PA 15213

138

SUGGESTED EQUIPMENT, TOOLS, SUPPLIES

LETTERPRESS*

(The depth and breadth of letterpress instruction, and attendant selection of materials, are local options)

LAYOUT

2 sets	Drafting pen; automatic, 5 or 7 unit
5 sets	Drafting
1	Film cutter
6 sets	Film scriber tool
Ass't'd	Lettering template
20	Light table/desk; small
1	Overhead projector
1	Pencil sharpener and pointer
20	Pica gauge
10	Rule
5	Scissors; 10 inch
20	Type specimen sheet
1	Waxer

Acetate sheets

Colored pencil sets

Drawing pads

Masking tape

Rubber cement

Show cards

Tissue

COMPOSITION

1	Brayer
20	Composing stick
4	ictionary
1	Galley rack
1	Lead cutter
1	Lead and slug rack
1	Linotype,or equiv.
7	Linotype magazines, mats, racks
1	Ludlow, or equiv.
2	Ludlow rack; with mats, spaces, sticks
1	Metal saw
1	Miterer
10	Numbering machine
20	Pica gauge

1	Proof press
1	Repro proof press
1	Rules and borders; with rack
1	Smelter
1	Table; proofreading, with chairs
	Type racks
Ass't'd	Type series

Linotype metal

POSITION AND LOCK-UP

1	Chase rack; with assortment of chases
1 set	Furniture; with rack
2	Mallet
2	Planer
2	Plunger can
1 set	Quoin; with rack
1	Stone
1	Storage rack; ink
1	Storage rack; roller

PRESSWORK

1	Cradle; barrel or pump, solvent
1	Drying rack
10	Knife; makeready
1	Press; automatic platen, Heidelberg 10 x 15, or equiv.
1	Press; automatic platen, Heidelberg 12 x 18, or equiv.
1	Press; hand, Kluge 10 x 15, or equiv.
1	Press; vertical platen, Miehle V-50, or equiv.
	Roller; spare, with rack
4	Safety can
4	Safety can; solvent
4	Spatula-ink knife
	Tool; press, with rack
4	Trash receptacle
Ass't'd	Tympan; with rack or holders
6	Tweezers

Gauge pins

Inks and additives

Solvent

Spray materials

Wipers

SUGGESTED EQUIPMENT, TOOLS, SUPPLIES

OFFSET

AYOUT

2 sets	Drafting pen; automatic, 5 or 7 unit
5	Drafting
1	Film cutter
6 sets	Film scriber tool
Ass't'd	Lettering template
20	Light table/desk; small
1	Overhead projector
1	Pencil sharpener and pointer
20	Pica gauge
10	Rule
5	Scissors; 10 inch
0	Type specimen sheet
1	Waxer

Acetate sheets

Colored pencil sets

	Drawing pads
	Masking tape
	Rubber cement
	Show cards
	Tissue

OMPOSITION

4	Brayer
Ass't'd	Clip art book
4	Dictionary
1	Film cutter
5	Light table
2	Phototypesetter; display
1	Phototypesetter; with spare keyboards and type
Ass't'd	Presstype; with type borders and ornaments
1	Table; line-up
1	Typesetter; strike-on
4	Typewriter; electric

	Rubber cement
	Wax

RKROOM		(Separate darkrooms for camera and enlarger are recommended, each with plumbing, light-trap door, and exhaust fan.)
1		Agitator
3		Apron
1		Camera
6		Chamois
1		Chart; filter use
24		Clip; drying
1		Contact printer
2		Contact screen
1		Densitometer; scale
1		Dispenser; towel
1		Dryer; film
1		Enlarger
1		Film cutter
1	set	Filters holder
6	pairs	Gloves; rubber
3		Graduate
6		Gray scale
1		Lens hood
1		Light; bump (flash)
4		Light; safe

1	Manual; enlarge/reduce
1	PMT; with processor
2	Proportion scale; Kodak or equiv.
1	Scissors; 10 inch
1	Sink; controlled temperature
1	Squegee
1	Storage rack; film
1	Tester; linen
2	Thermometer
1	Timer
2	Tongs
4	Tray
1	Work bench

Chemicals

Cleaner; film

Cleaner; tray

Films

Photo paper

STRIPPING

6	Dispenser; dual, for clear and red litho tapes
1	Film cutter
6 sets	Film scriber
5	Light table; with stool
4	Loupé or magnifying glass
Ass't'd	Opaque brush
20	Pica gauge
1	Registration system; with punch
6	Ruler
6	Scissors; 10 inch
1 set	Scriber
1	Table; line-up
1	Tester; linen
6	Trash receptacle
6	Tweezers

Blades; razor

Cleaner; film

Cleaner; glass

Opaque fluid

	Pencils
	Rubylith
	Sheets; masking
	Tape; litho

PLATEMAKING

1	Dispenser; towel
1	Platemaker
1	Rack; flat storage
1	Rack; plate storage
1	Squegee
1	Sink; plate
1	Table; plate
1 set	Tools; engraver's
1	Trash receptacle

	Carbons/spare bulbs
	Cheesecloth
	Cleaner; glass
	Color key and developer

	Developer
	Fluid; deletion
	Gum
	Pads; cotton
	Pads; developing
	Plates assortment
	Proofing paper and fix
	Touche

PRESSWORK

8	Bottle; wash-up
8	Bowl; gum
2	Duplicator; AB Dick 360, or equiv.
2	Duplicator; Davidson 500, or equiv.
2	Duplicator; Multilith 1250 W, or equiv.
4	Machine; wash-up
8	Pail; water, 1 liter
8	Plunger can
1 kit	PMS
1	Press; Heidelberg KORA 18 inch x 25 inch, or equiv., with spare rollers and rack
1	Press; web, Apollo 2-color, 8½ inch x 11 inch cut-off, or equiv.

Ass't'd	Press skid; spare
2	Safety can
8	Spatula-ink knife
1	Storage cabinet; ink
4	Trash receptacle
8	Work bench

Additives; ink

Blankets; spare

Concentrate; fountain

Covers; dampener

Fluid; deletion

Gum

Pads; cotton, with dispenser

Powder; blanket

Sheets; cleaner

Sheets; packing

Spray materials

Sponges

Talc

Wipers

SUGGESTED EQUIPMENT, TOOLS, SUPPLIES

BINDERY

1	Bindery table and chair
1	Collator; semiautomatic, 16 bin minimum
1	Dispenser; filament tape
1	Dispenser; gummed tape
4	Dispenser; wrapping paper, assorted sizes
1	Folder; 17 inch x 22 inch, with right angle unit
1	Jogger
4	Knife; padding
1	Ladder; stockroom rolling safety, 22 inch x 96 inch
3	Pad counter
1	Paper cutter; power, 36 inch minimum
1	Paper drill; multihead, with drill assortment
1	Perfect binder
1	Plastic binder
1	Plastic punch
1	Press; padding
	Shelving; stockroom, 48 inch x 36 inch

1 Stapler; multihead, electric

1 Wire stitcher; double head, with spare rolls and wire

1 Work bench; cutter

Brushes; cement

Cement; padding

Cutting sticks

Padding; carbonless

Perfect binder supplies

Plastic element

Stock

Tape; filament

Tape; gummed

Wrapping paper

SUGGESTED EQUIPMENT, TOOLS, SUPPLIES

GENERAL

Book rack

Cabinet; file, legal size

Cabinet; manuals

Chalkboard

Desk basket

Furniture; classroom

Projector; overhead

Sample books; paper

Screen; projection

Supply catalog; paper

Supply catalog; printer's

Tool rack; portable, with tools

Typewriter; electric, with typing table and chair